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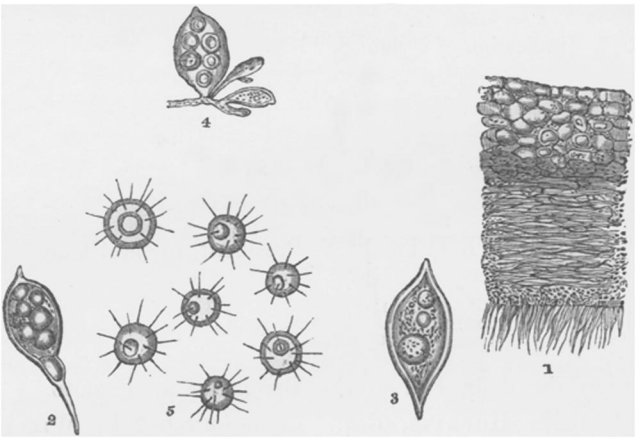
the radicular appendages are tinged blue by solution of iodine, and that he has observed the same effect produced upon the matter contained in the summits of the asci, and upon the mucous envelope of the sporidia of several species of *Sphæria*. It would seem, therefore, that the absence of starch can no longer be considered as characteristic of the Fungi, and that the existence of that substance in an amorphous state may be considered as satisfactorily proved.



DESCRIPTION OF THE FIGURES.

Fig. 1. Vertical section of the coat of the Fungus, showing the successive layers of cells, the innermost of which give off threads into the interior of the plant, × 315 diameters.

Figs. 2 and 3. Asci with sporidia, × 415. In fig. 3 the sporidia are only partially matured.

Fig. 4. The extremity of a thread showing the mode of origin of the asci, × 315.

Fig. 5. Free sporidia, × 415.

IV. "On the Singular Solutions of Differential Equations." By the Rev. Robert Carmichael, Fellow of Trinity College, Dublin. Communicated by Arthur Cayley, Esq. Received December 28, 1857.

(Abstract.)

The objects contemplated in this paper are the following:—

1. The reduction to a symmetrical form of the well-known theorem by Clairaut for the integration of differential equations in a

single independent variable, and the simultaneous determination of the singular solutions, if such exist; the generalisation of the transformed types, and the application of the result to the integration of a large variety of partial differential equations in any number of independent variables, and the simultaneous determination of their singular solutions, where such exist.

2. The examination of the general theory commonly attributed to Laplace.

3. The indication of certain desiderata.

February 4, 1858.

The LORD WROTTESLEY, President, in the Chair.

The following communications were read:—

I. "On the daily Fall of the Barometer at Toronto." By THOMAS HOPKINS, Esq. Communicated by WILLIAM FAIRBAIRN, Esq. Received December 19, 1857.

(Abstract.)

In this paper the writer exhibited tables of the movements of meteorological instruments registered at Toronto in 1846, in the months of January and July, as specimens of the changes which take place in the atmosphere in winter and summer. The principal object was to find the cause of the fall of the barometer in the middle of the day. The author endeavours to show that the vapour, which in the early part of the day was produced by solar heat at the surface, by its expansive power, bore that heat to the upper regions of the air, where it was condensed by the cold of the gases in that situation, when the heat of elasticity was set at liberty to warm and expand the gases, and that it was this expansion which reduced atmospheric pressure in the locality and caused a fall of the barometer.